**FIGURE 1**

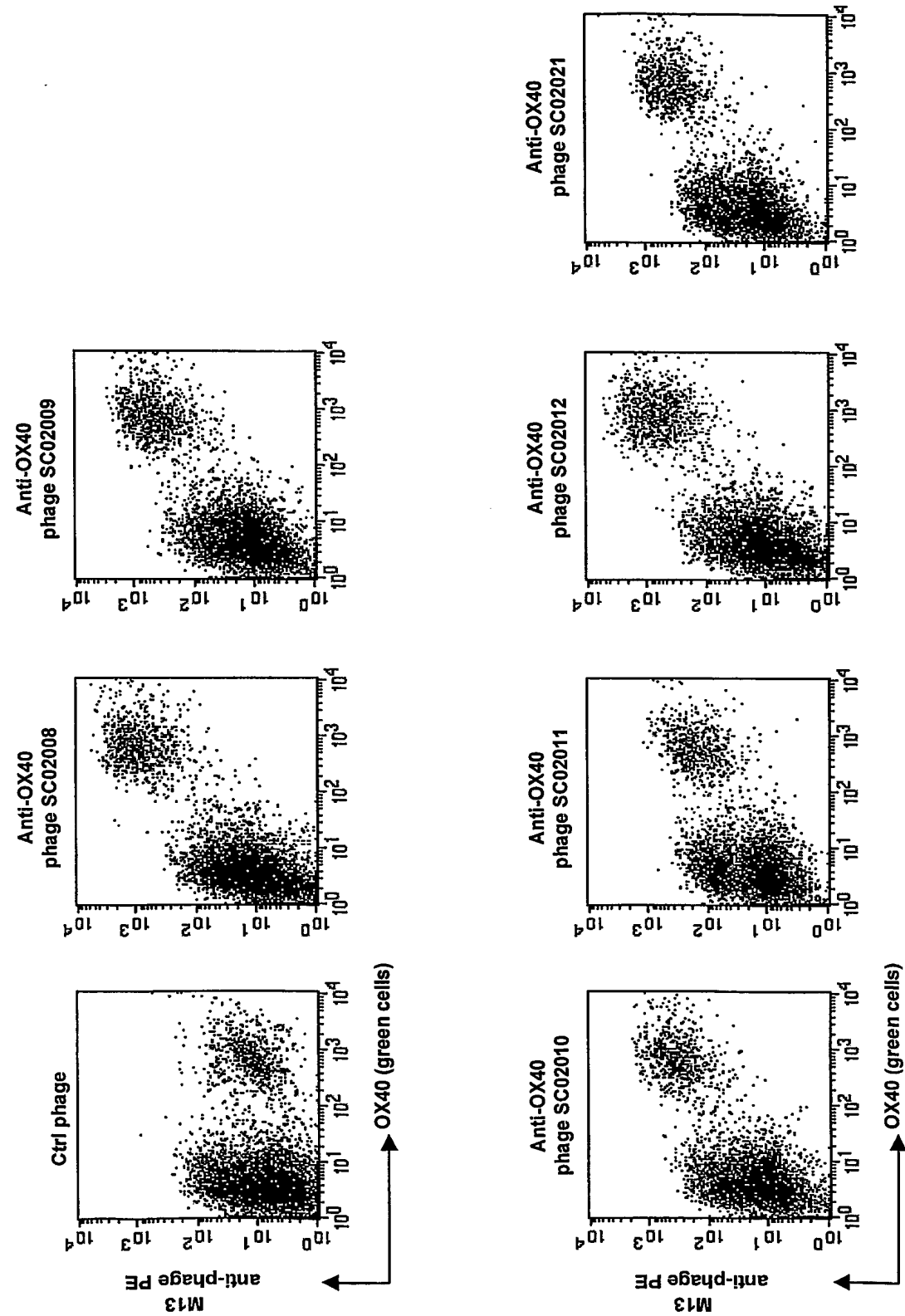


Figure 2

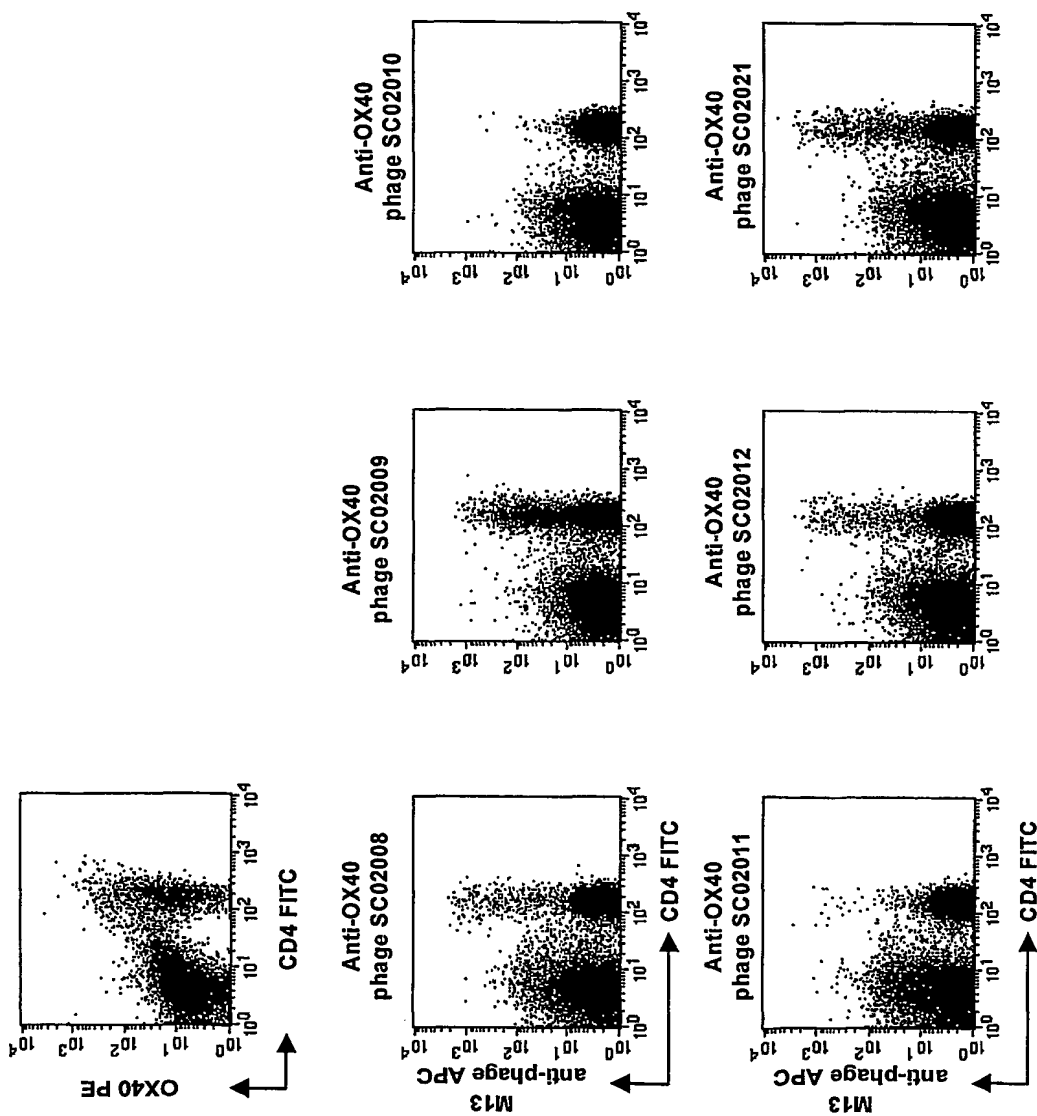


Figure 3A

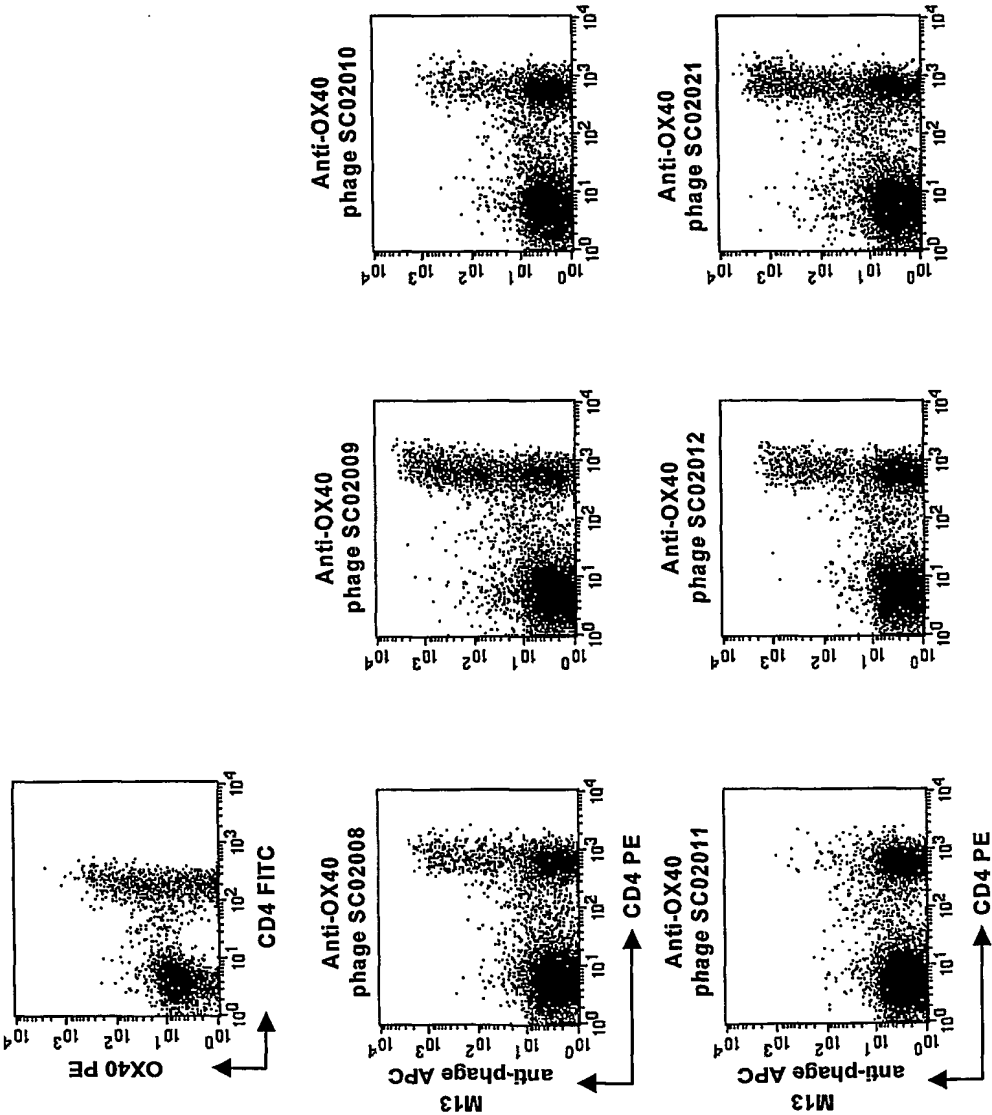


Figure 3B

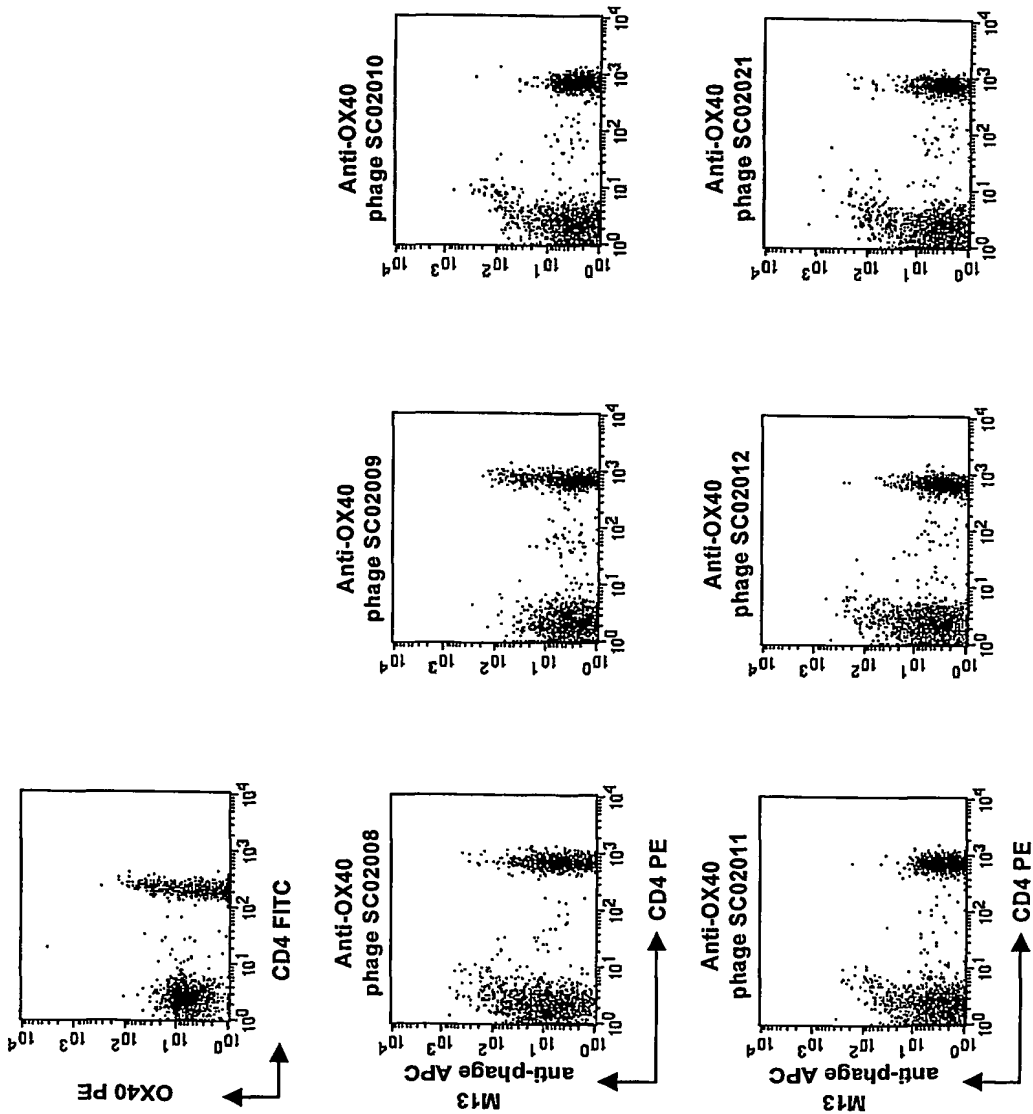


Figure 3C

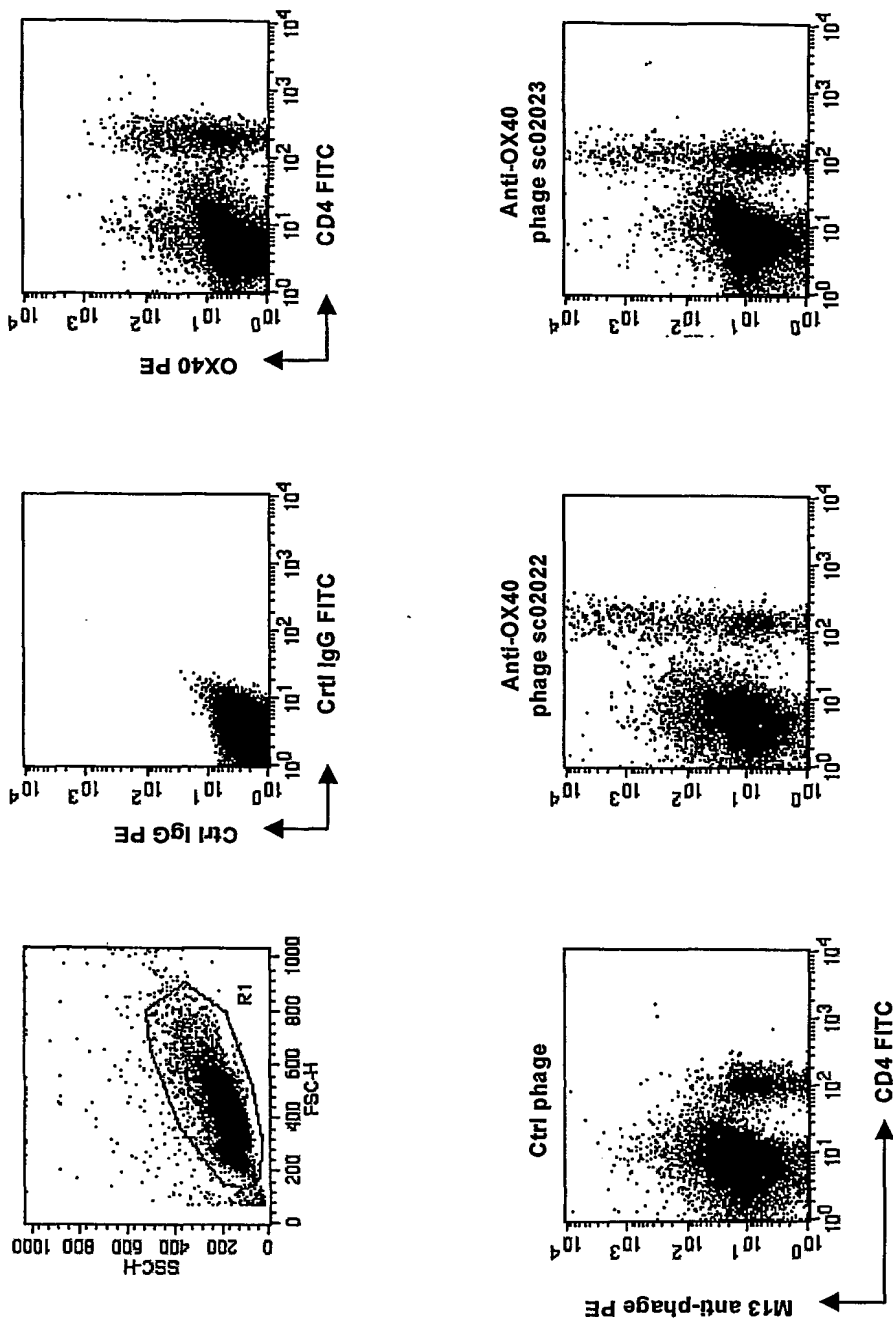
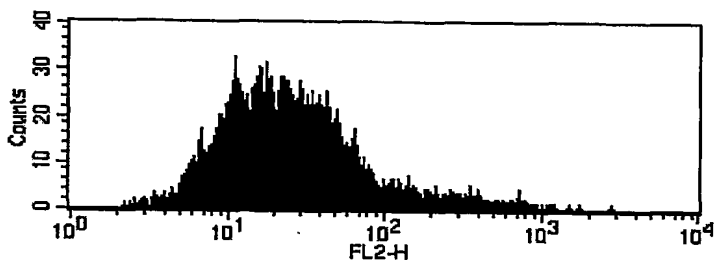
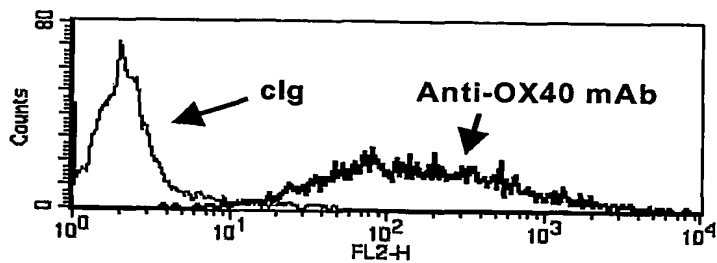
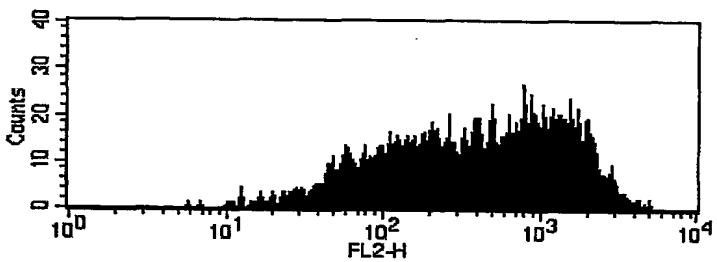


Figure 4A

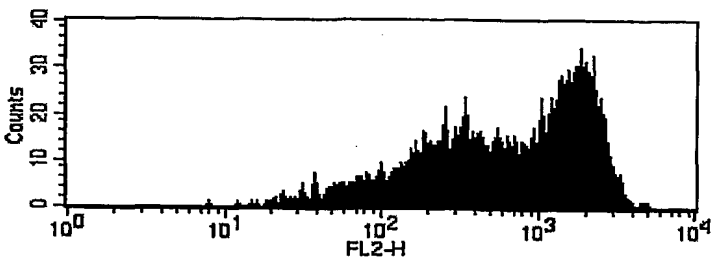
**Perc6 OX40 transfectant**



**Ctrl phage**



**Anti-OX40  
phage sc02022**



**Anti-OX40  
phage sc02023**

— M13 anti-phage PE —>

**Figure 4B**

## Anti-human OX40R scFv SC02008

NcoI  
~~~~~

143           M A E V Q L V E S G G G L V Q P G G S L R  
            CCATGGCTGAGGTGCAGCTGGTGGAGTCTGGGGGAGGCTTGGTCCAGCCTGGAGGGTCCCTGAG

214           L S C A A S G F T F S N Y T M N W V R Q A P G  
            ACTCTCCTGTGCAGCCTCTGGATTACCTTTAGCAACTACACGATGAAGTGGGTCCGCCAGGCGCCCGGGA

285           K G L E W V S A I S G S G G S T Y Y A D S V K G  
            AGGGGCTGGAGTGGGTCTCAGCTATTAGTGGTAGTGGTGGTAGCACATACTACGCAGACTCCGTGAAGGGC

356           R F T I S R D N S K N T L Y L Q M N S L R A E D  
            CGGTTCAACATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAATGAACAGCCTGAGAGCCGAGGA

427           T A V Y Y C A K D R Y S Q V H Y A L D Y W G Q  
            CAGGCGCGTGTATTACTGTGCCAAGACCGCTACTCCCAGGTGCACTACGCGTTGGATTACTGGGGCCAGG

498           G T L V T V L E G T G G S G G T G S G T G T S E  
            GCACCCTGGTGACCGTGCTCGAGGGTACCGGAGGTTCCGGCGGAACCGGGTCTGGGACTGGTACGAGCGAG

569           L D I Q M T Q S P D S L P V T P G E P A S I S C  
            CTCGACATCCAGATGACGCAGTCTCCAGACTCACTGCCCGTCACCCCTGGAGAGCCGGCCTCCATCTCCTG

640           R S S Q S L L H S N G Y N Y L D W Y L Q K A G  
            CAGGTCTAGTCAGAGCCTCCTGCATAGTAATGGATACAACATATTGGATTGGTACCTGCAGAAGGCAGGGC

711           Q S P Q L L I Y L G S N R A S G V P D R F S G S  
            AGTCTCCACAGCTCCTGATCTATTTGGGTTCTAATCGGGCCTCCGGGGTCCCTGACAGGTTCACTGGCAGT

782           G S G T D F T L K I S R V E A E D V G V Y Y C Q  
            GGATCAGGCACAGATTTTACACTGAAAATCAGCAGAGTGGAGGCTGAGGATGTTGGGGTTTATTACTGCCA

NotI  
~~~~~

853           Q Y Y N H P T T F G Q G T K L E I K R A A  
            GCAGTACTACAACACCCGACGACCTTCGGCCAGGGCACCAAACTGGAAATCAAACGCGCGGGCCG

Figure 5





## Anti-human OX40R scFv SC02010

NcoI  
~~~~~  
M A E V Q L V

72 CCATGGCTGAGGTGCAGCTGGTGG

143 E S G G G L I Q P G G S L R L S C A A S G F T F  
AGTCTGGGGGAGGCTTGATCCAGCCTGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTC

214 S G Y P M N W V R Q A P G K G L E W V A V I S Y  
AGCGGCTACCCTATGAACTGGGTCCGCCAGGCGCCCGGAAGGGGCTGGAGTGGGTGGCAGTTATATCATA

285 D G S N K Y Y A D S V K G R F T I S R D N S K  
TGATGGAAGTAATAAATACTACGCAGACTCCGTGAAGGGCCGATTACCATCTCCAGAGACAATTCCAAGA

356 N T L Y L Q M N S L R A E D T A V Y Y C A R D M  
ACACGCTGTATCTGCAAATGAACAGCCTGAGAGCTGAGGACACAGCCGTGTATTACTGTGCAAGAGACATG

427 S G F H E F D Y W G Q G T L V T V L E G T G G S  
TCCGGCTTCCACGAGTTCGATTACTGGGGCCAGGGCACCCCTGGTGACCGTGCTCGAGGGTACCGGAGGTTC

498 G G T G S G T G T S E L T Q S P S S L S A S V  
CGGCGGAACCGGTCTGGGACTGGTACGAGCGAGCTCACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAG

569 G D R V T I T C R A S Q S I S S Y L N W Y Q Q K  
GAGACAGAGTCACCATCACTTGCCGGGCAAGTCAGAGCATTAGCAGCTACTTAAATTGGTATCAGCAGAAA

640 P G K A P K L L I Y A A S S L Q S G V P S R F S  
CCAGGGAAAGCCCCTAAGCTCCTGATCTATGCTGCATCCAGTTTGCAAAGTGGGGTCCCATCAAGGTTTCAG

711 G S G S G T D F T L T I S S L Q P E D F A T Y  
TGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGTCTGCAACCTGAAGATTTTGCAACTTACT

NotI  
~~~~~

782 Y C Q Q S Y S T P P T F G Q G T K V E I K R A A  
ACTGTCAACAGAGTTACAGTACCCCTCCAAGTTCGGCCAAGGGACCAAGGTGGAGATCAAACGTGCGGCC

853 GC

Figure 7

## Anti-human OX40R scFv SC02011

NcoI  
~~~~~

143                   M A E V Q L V E S G G G V V Q P G R  
                  CCATGGCTGAGGTGCAGCTGGTGGAGTCTGGGGGAGGCGTGGTCCAGCCTGGGAGGT

214           S L R L S C A A S G F T F S D Y T M N W V R Q A  
              CCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTCAGCGACTACACGATGAACTGGGTCCGCCAGGCG

285           P G K G L E W V S S I S G G S T Y Y A D S R K G  
              CCCGGGAAGGGGCTGGAGTGGGTCTCATCCATTAGTGGTGGTAGCACATACTACGCAGACTCCAGGAAGGG

356           R F T I S R D N S K N T L Y L Q M N N L R A E  
              CAGATTACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTTCAAATGAACAACCTGAGAGCTGAGG

427           D T A V Y Y C A R D R Y F R Q Q N A F D Y W G Q  
              ACACGGCCGTGTATTACTGTGCAAGAGACCGCTACTTCAGGCAGCAGAACGCGTTTCGATTACTGGGGCCAG

498           G T L V T V L E G T G G S G G T G S G T G T S E  
              GGCACCCCTGGTGACCGTGCTCGAGGGTACCGGAGGTTCCGGCGGAACCGGGTCTGGGACTGGTACGAGCGA

569           L D I Q M T Q S P V T L P V T P G E P A S I S  
              GCTCGACATCCAGATGACTCAGTCTCCAGTCACCCTGCCCGTCACCCCTGGAGAGCCGGCCTCCATCTCCT

640           C R S S Q S L L H S N G Y N Y L D W Y L Q K P G  
              GCAGGTCTAGTCAGAGCCTCCTGCATAGTAATGGATACAACTATTTGGATTGGTACCTGCAGAAGCCAGGG

711           Q S P Q L L I Y L G S N R A S G V P D R F S G S  
              CAGTCTCCACAGCTCCTGATCTATTTGGGTTCTAATCGGGCCTCCGGGGTCCCTGACAGGTTTCAGTGGCAG

782           G S G T D F T L K I S R V E A E D V G V Y Y C  
              TGGATCAGGCACAGATTTTACACTGAAAATCAGCAGAGTGGAGGCTGAGGATGTTGGGGTTTATTACTGCC

NotI  
~~~~~

853           Q Q Y L T A P P T F G Q G T K L E I K R A A  
              AGCAGTACCTCAGGCCCCGCCACCTTCGGCCAGGGCACCAAATGGAATCAAACGCGCGGCCGC

Figure 8

## Anti-human OX40R scFv SC02012

NcoI  
~~~~~  
M A E V Q L V E

72 CCATGGCTGAAGTGCAGCTGGTGA

S G G G L V K P G G S L R L S C A A S G F T F S  
AAGCGGCGGCGGCTGGTGAAGCCGGGTGGCAGCCTGCGCCTGAGCTGCGCCGCTAGCGGCTTCACCTTTA

214 N D S M N W M R Q A P G K G L E W V A N I N Q  
GCAACGACTCGATGAAGTGGATGCCAGGCCCGGGCAAAGGCCTCGAATGGGTGGCCAATATCAATCAG

285 D G N E K Y Y A D S V K G R F T I S R D N S K N  
GATGGCAACGAAAAATATTACGCCGACTCTGTCAAAGGCCGCTTCACCATCAGTCGCGATAACTCCAAAAA

356 S L Y L Q M N S L R D E D T A L Y Y C A R A R  
CTCCCTGTACCTGCAGATGAACAGCCTGCGCGACGAAGATACCGCCCTGTACTACTGCGCACGCGCCCGCG

427 A A G T I F D Y W G Q G T L V T V L E G T G G S  
CCGCCGGCACCATCTTCGATTACTGGGGCCAGGGCACCCCTGGTGACCGTGCTCGAGGGTACCGGAGGTTC

498 G G T G S G T G T S E L D I Q M T Q S P S S L S  
GGCGGAACCGGTCTGGGACTGGTACGAGCGAGCTCGATATCCAGATGACCCAGAGCCCGAGTTCCTGAG

569 A S V G D R V T I T C R A S Q N V S N Y L T W  
CGCCTCCGTGGGCGACCGCGTGACCATCACCTGCCGCGCCAGCCAGAACGTGAGCAACTACCTGACCTGGT

640 Y Q Q K P G K A G K L L I Y A A S S L Q S G V P  
ACCAGCAGAAACCGGGCAAGGCTGGCAAACCTGCTGATTTACGCCGCCAGCAGCCTCCAAAGCGGCGTGCCG

711 S R F S G S G S G T D F T L T I S S L Q P E D F  
TCTAGATTGAGTGGCTCCGGCTCCGGAACCGATTTTACCCTGACCATCAGCAGCCTGCAGCCGGAAGATTT

782 A T Y Y C Q Q S Y F N P A T F G Q G T K L E I  
CGCTACCTACTATTGTGACGAGTCTTCAACCCGGCGACCTTCGGCCAGGGCACCAAACTGGAAATCA

NotI  
~~~~~

853 K R A A  
AACGCGCGGCGCG

Figure 9

## Anti-human OX40R scFv SC02021

NcoI  
~~~~~

143 M A E V Q L V E S G G G L  
CCATGGCTGAGGTGCAGCTGGTGGAGTCTGGGGGAGGCTTG

214 V Q P R G S L R L S C A A S G F T F S S Y A M N  
GTACAGCCTAGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTTAGCAGCTACGCGATGAA

285 W V R Q A P G K G L E W V A V I S Y D G S N K  
CTGGGTCCGCCAGGCGCCCGGAAGGGGCTGGAGTGGGTGGCAGTTATATCATATGATGGAAGCAATAAAT

356 Y Y A D S V K G R F T I S R D N S K N T L Y L Q  
ACTACGCAGACTCCGTGAAGGGCCGATTACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAA

427 M N S L R A E D T A V Y Y C A K D R Y I T L P N  
ATGAACAGCCTGAGAGCTGAGGACACAGCCGTGTATTACTGTGCCAAAGACCGCTACATCACGTTGCCGAA

498 A L D Y W G Q G T L V T V L E G T G G S G G T  
CGCGTTGGATTACTGGGGCCAGGGCACCCCTGGTGACCGTGCTCGAGGGTACCGGAGGTTCCGGCGGAACCG

569 G S G T G T S E L D I Q M T Q S P V S L P V T P  
GGTCTGGGACTGGTACGAGCGAGCTCGACATCCAGATGACCCAGTCTCCAGTCTCACTGCCCCTCACCCCT

640 G E P A S I S C R S S Q S L L H S N G Y N Y L D  
GGAGAGCCGGCCTCCATCTCCTGCAGGTCTAGTCAGAGCCTCCTGCATAGTAATGGATACAACATATTTGGA

711 W Y L Q K P G Q S P Q L L I Y L G S N R A S G  
TTGGTACCTGCAGAAGCCAGGGCAGTCTCCACAGCTCCTGATCTATTTGGGTTCTAATCGGGCCTCCGGGG

782 V P D R F S G S G S G T D F T L K I S R V E A E  
TCCCTGACAGGTTTCAGTGGCAGTGGATCAGGCACAGATTTTACACTGAAAATCAGCAGAGTGGAGGCTGAG

853 D V G V Y Y C Q Q Y K S N P P T F G Q G T K V E  
GATGTTGGGGTTTATTACTGCCAGCAGTACAAGTCGAACCCGCCACCTTCGGCCAGGGCACCAAAGTGGA

NotI  
~~~~~

924 I K R A A  
AATCAAACGCGCGGCCGC

Figure 10



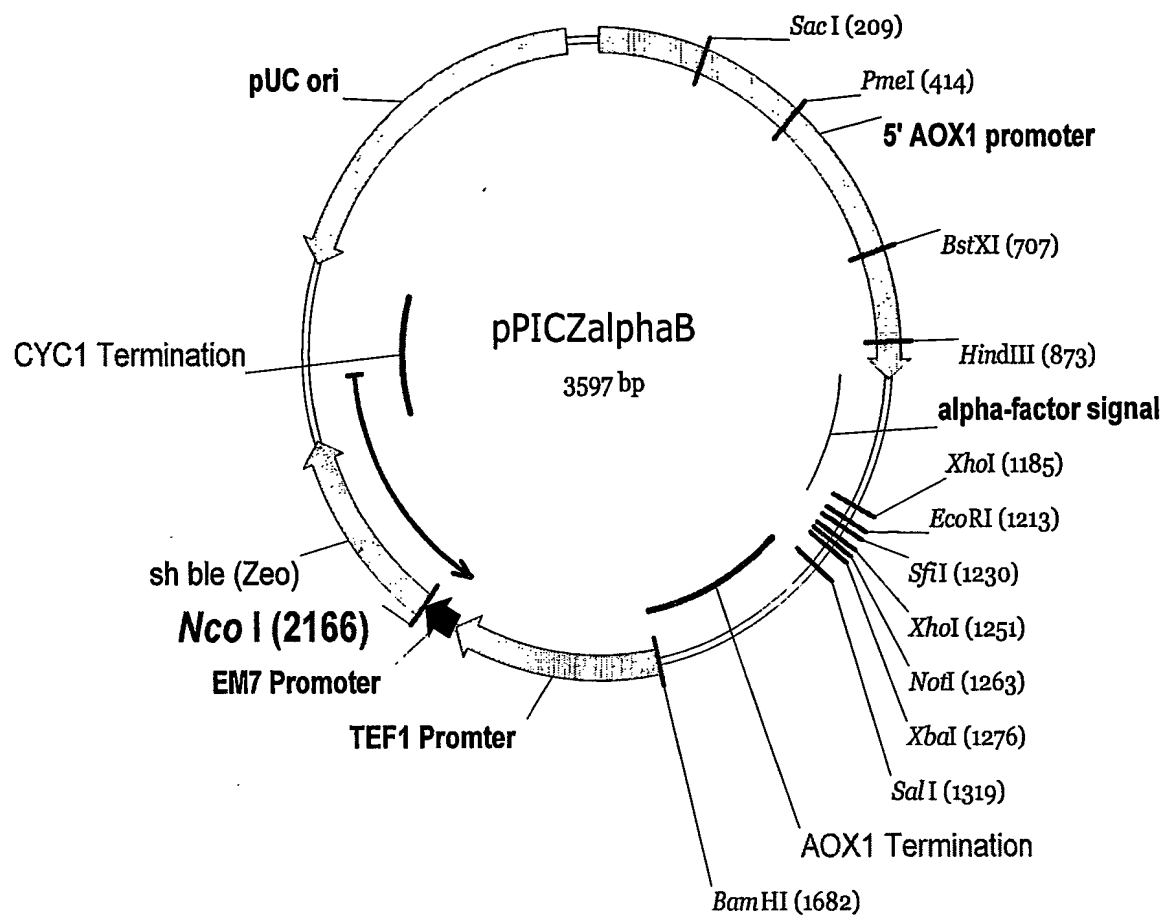
## Anti-human OX40R scFv SC02023

```

                                NcoI
                                ~~~~~
                                M A E V Q L V E
72                                CCATGGCCGAGGTGCAGCTGGTGGAG
                                S G G G L V H P G G S L R L S C A G S G F T F S
143    TCTGGGGGAGGCTTGGTACATCCTGGGGGGTCCCTGAGACTCTCCTGTGCAGGCTCTGGATTCACCTTCAG
                                S Y A M H W V R Q A P G K G L E W V S A I G T
214    TAGCTATGCTATGCACTGGGTTCGCCAGGCTCCAGGAAAAGGTCTGGAGTGGGTATCAGCTATTGGTACTG
                                G G G T Y Y A D S V M G R F T I S R D N S K N T
285    GTGGTGGCACATACTATGCAGACTCCGTGATGGGCCGGTTCACCATCTCCAGAGACAATCCAAGAACACG
                                L Y L Q M N S L R A E D T A V Y Y C A R Y D N V
356    CTGTATCTGCAAATGAACAGCCTGAGAGCCGAGGACACGGCCGTGTATTACTGTGCAAGATACGACAATGT
                                M G L Y W F D Y W G Q G T L V T V S S G G G G
427    GATGGGTCTTTACTGGTTTGACTACTGGGGCCAAGGTACCCTGGTCACCGTCTCGAGTGGTGGAGCGGTT
                                S G G G G S G G G G S E I E L T Q S P A T L S L
498    CAGGCGGAGGTGGCTCTGGCGGTGGCGGATCGGAAATTGAGCTCACACAGTCTCCAGCCACCCTGTCTTTG
                                S P G E R A T L S C R A S Q S V S S Y L A W Y Q
569    TCTCCAGGGGAAAGAGCCACCCTCTCCTGCAGGGCCAGTCAGAGTGTTAGCAGCTACTTAGCCTGGTACCA
                                Q K P G Q A P R L L I Y D A S N R A T G I P A
640    ACAGAAACCTGGCCAGGCTCCAGGCTCCTCATCTATGATGCATCCAACAGGGCCACTGGCATCCCAGCCA
                                R F S G S G S G T D F T L T I S S L E P E D F A
711    GGTTCAGTGGCAGTGGGTCTGGGACAGACTTCACTCTCACCATCAGCAGCCTAGAGCCTGAAGATTTTGCA
                                V Y Y C Q Q R S N W P P A F G G G T K V E I K R
782    GTTTATTACTGTCAGCAGCGTAGCAACTGGCCTCCGGCTTTTCGGCGGAGGGACCAAGGTGGAGATCAAACG
                                NotI
                                ~~~~~
                                A A
853    TGGCGCCGC

```

Figure 12

**Figure 13A**



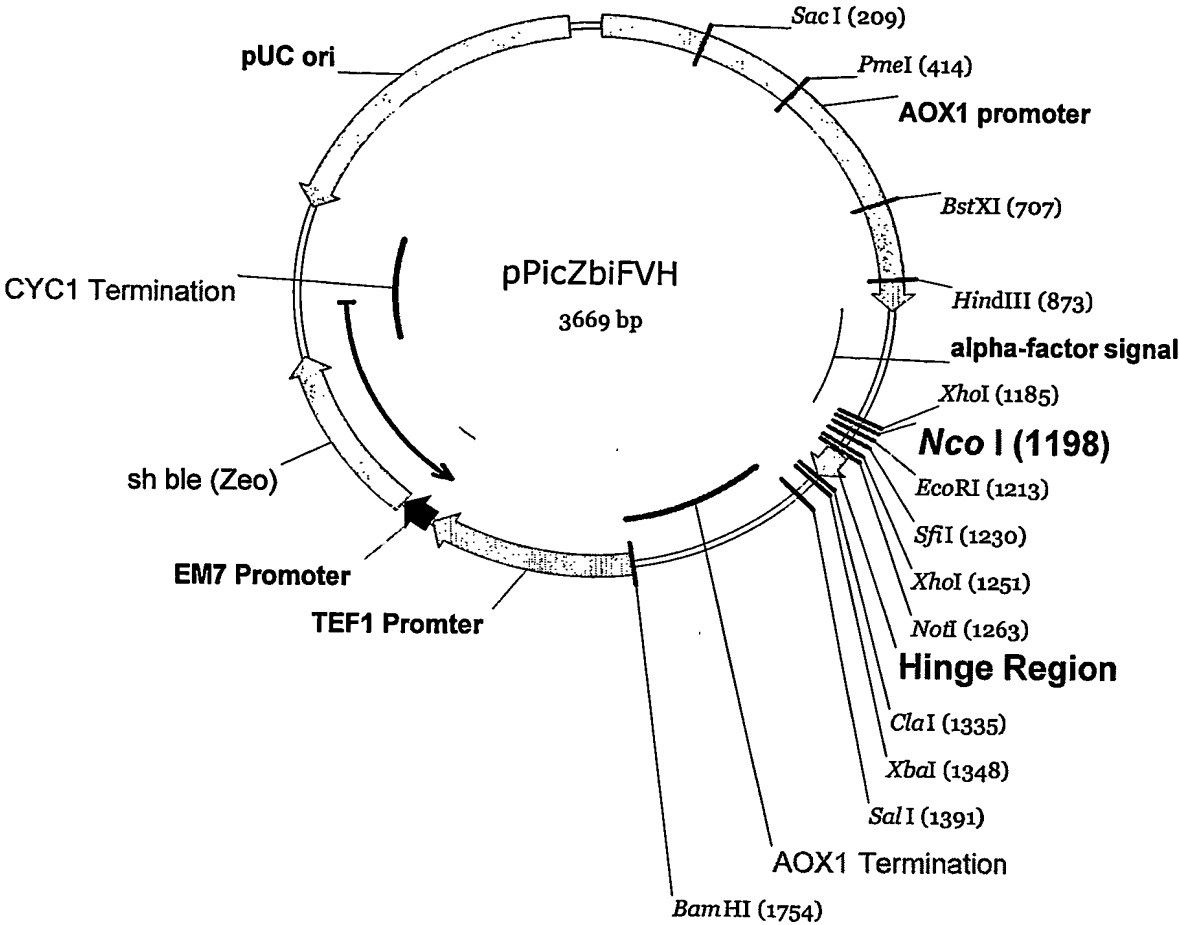


Figure 13B

## 5' Cloning site of pPicZαB

XhoI                      KEK2                      EcoRI                      SfiI  
 ~~~~~                      Cleavage                      ~~~~~                      ~~~~~  
                                          ↓                      site  
 S L E K R E A E A A G I H V A Q P A  
 1151 TCTCTCGAGA AAAGAGAGGC TGAAGCTGCA GGAATTCACG TGGCCCAGCC GGCCG  
 AGAGAGCTCT TTTCTCTCCG ACTTCGACGT CCTTAAGTGC ACCGGGTCGG CCGGC

## 5' Cloning site of pPicZFVH

XhoI                      KEK2                      NcoI                      EcoRI                      SfiI  
 ~~~~~                      Cleavage                      ~~~~~                      ~~~~~  
    ↓                      site  
 S L E K R A M E A A G I H V A Q P A  
 1151 TCTCTCGAGA AAAGAGCCATGGAAGCTGCA GGAATTCACG TGGCCCAGCC GGCCG  
 AGAGAGCTCT TTTCTCGGTACCTTCGACGT CCTTAAGTGC ACCGGGTCGG CCGGC

## synthetic hinge fragment

← NotI                      Flexible upper                      Cysteine residues  
    hinge region                      available for  
                         disulphide bonding  
                         ↓                      ↓  
 A A A P K P S T P P G S S C P P C .  
 1 GCGGCCGCGC CAAAGCCAAG TACCCACCA GGTTCATCAT GTCCACCATG  
 CGCCGCGCGC GTTTCGGTTC ATGGGGTGGT CCAAGAAGTA CAGGTGGTAC  
 Short linker                      ClaI                      XbaI  
                                          ~~~~~                      ~~~~~  
 P G S G G A P I D S G F L  
 51 TCCAGGCTCT GCGGGTTCGC CAATCGATAG CGGCTTTCTA GA  
 AGGTCCGAGA CCGCCACGCG GTTAGCTATC GCCGAAAGAT CT

Figure 13C

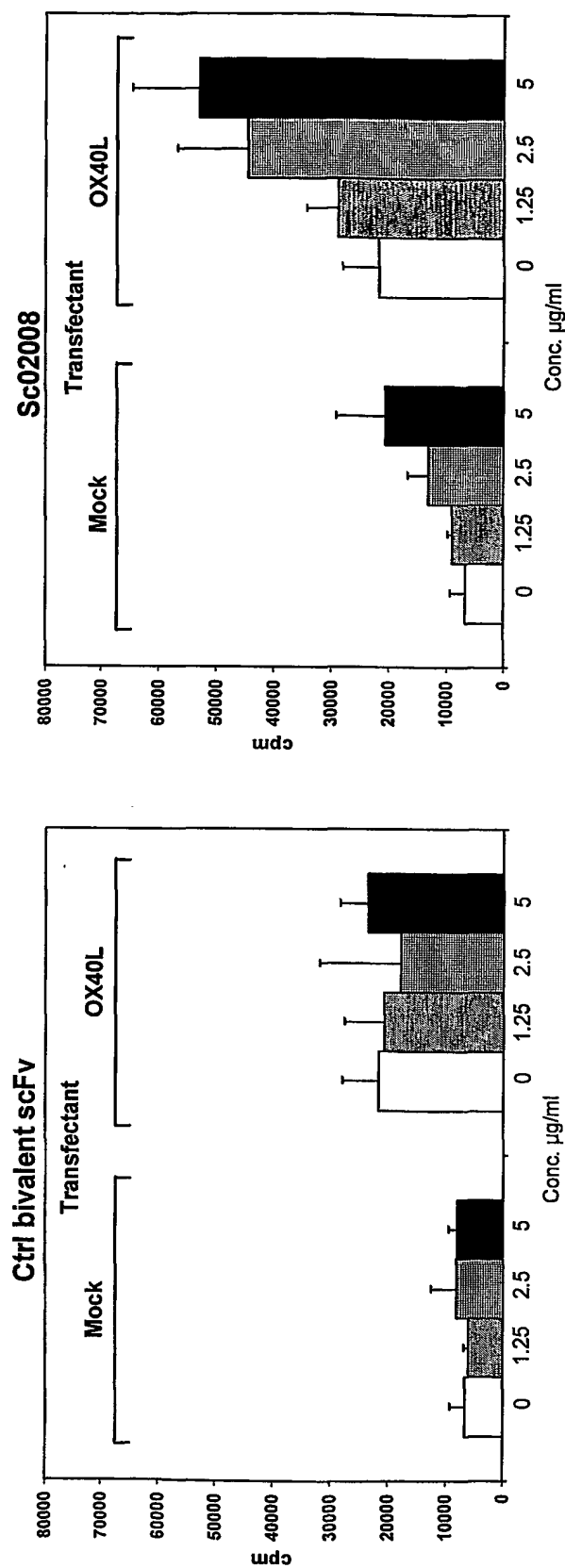


Figure 14A

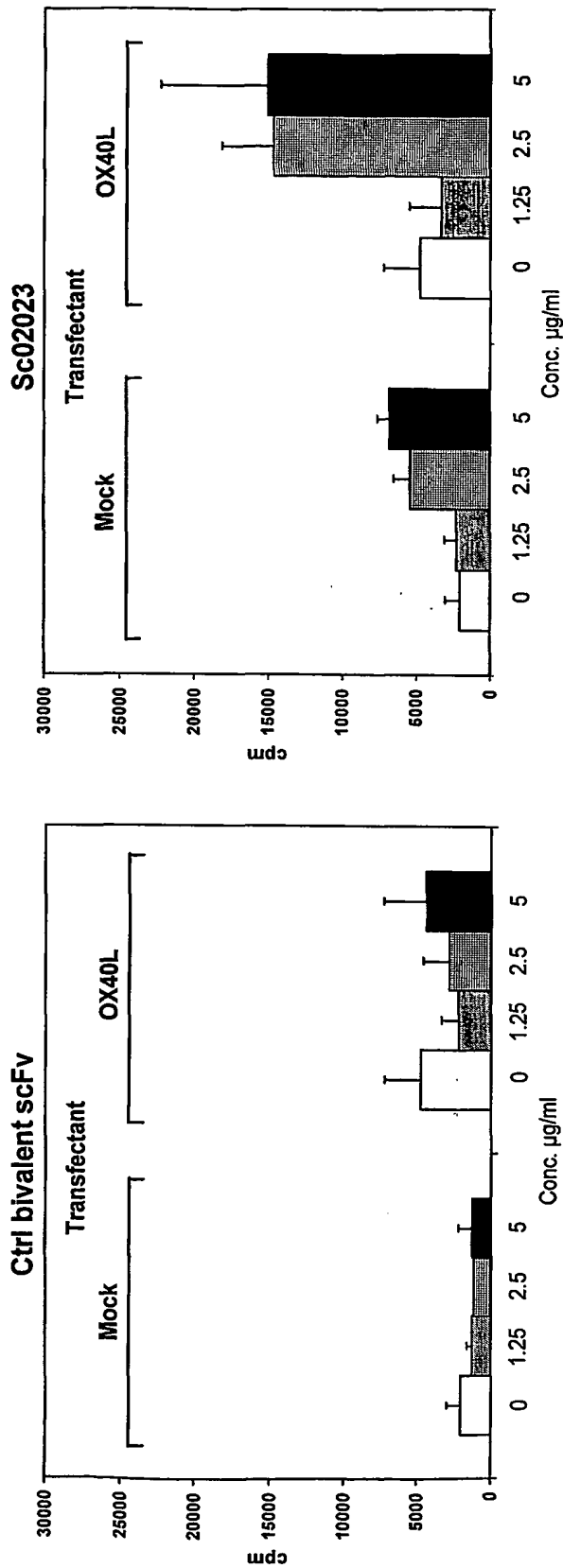


Figure 14B

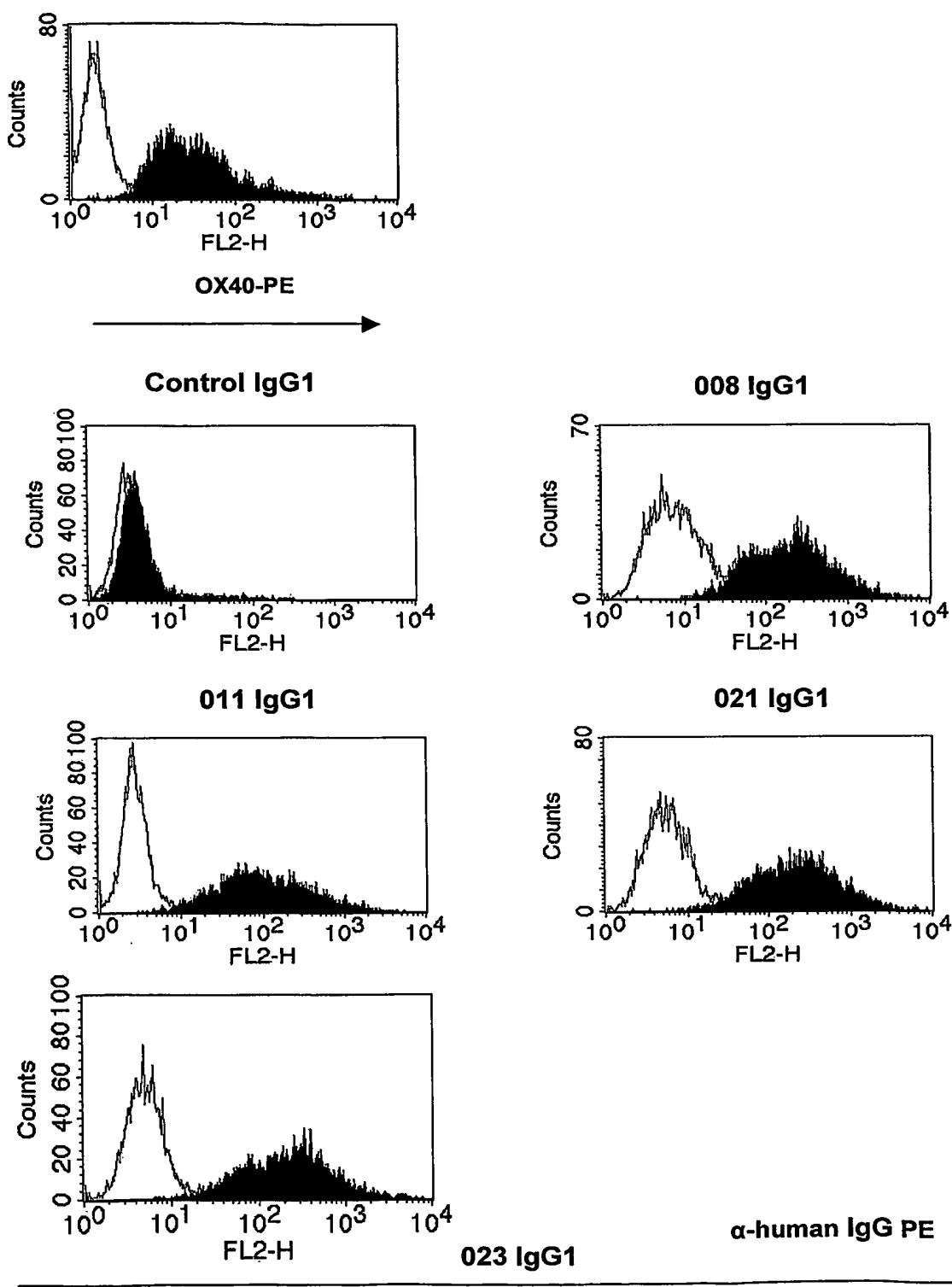


Figure 15